

**Industry Meeting: SC-186 WG4 ASSAP MOPS**

No.	Item	Assignee	Date Due	Open / Closed	Comments	Solution
1	The location of databases/surface map is not focused on in DO-272A, DO-257, OSCD, or ASAS MASPS. This concern is to be conveyed to the CDTI working group .	Bill ???		Closed	The following was discussed at Group Meeting #2. The airport surface maps are external to the ASA system boundaries as defined in the MASPS. Bill volunteered to verify if ASSAP has to consider database input requirements for ASSA and FAROA. Reference Issue S5	
2	ACSS has an action to verify the use and origin, either ASSAP or CDTI, of the tag / cross reference flag with the CDTI group.	Tom Eich	Jan11, 07 joint meeting	Open	Coordinate with the CDTI group on this issue. Reference Issue I6.	
3	Develop/discuss filtering constraints (e.g., number, range, altitude, vertical height) as relate to the LA Basin 2020 scenario and projected traffic densities. Note: Neither Mike Castle (APL) or Larry Bachman (APL) were in attendance. The individuals were volunteered without their knowledge or consent. Determine the traffic count applying various filters to the 234 targets to eliminate targets moving away, etc.	Tom Eich, Randy & Larry	Dec '06 telecon	Open	This issue was discussed at Group Meeting #2. No conclusions were made. Action items were created related to this issue. Excerpt from group meeting minutes #4, "Regarding tracking capacity requirements. A minimum tracking of 120 targets from Randy's presentation (ASSAP-WP08-12) is suggested. Performance requirements are also needed on which 120 targets have to be tracked. For example: ASSAP shall track a minimum of the most relevant 120 targets. More performance requirements should be considered."	
4	Determine the minimum number of tracks ASSAP will be required to send to the CDTI. The MASPS specified the CDTI will support a minimum of 30 tracks	Randy / APL	14-Jun-06	Closed	The following was discussed at Group Meeting #2. The group agreed that a minimum of 60 is a good starting point. Reference Issue I3	
5	Provide a white paper which discusses processing options related to the selection of ADS-B/TCAS tracks for tracks pairs that spatially correlate, do not spatially correlate. Scenarios to discuss the advantages/disadvantages of displaying TCAS/ADS-B, the advantage/disadvantages of providing ASA applications the ASAS track if not correlated with TCAS.	Tom Eich	Feb '07	Open	The following was discussed at Group Meeting #2. All agreed that when integrated with a TCAS system, you need to verify that the ADS-B track does not compromise the intended safety of the TCAS system. A spatial window was proposed. More discussion is needed on this issue. Reference Issue I6	
6	Assemble a proposal/strawman related to track selection based on SIL and NAC.	Joel Wichgers	14-Jun-06	Closed	During Group Meeting #2, the group agreed that this proposal is a good start and will have to be further analyzed when the applications are further addressed.	
7	Identify any inconsistencies and/or traceability problems between documents sources as they relate to ACL/TQL	All	14-Jun-06	Closed	During Group Meeting #2, the group agreed that TQL and ACL are not required until the advanced applications are addressed.	
8	Determine where the report consolidation/selection is to occur (ADSB/TISB Receive Subsystem/ ASSAP) when a system has the ability to receive an A/V report from multiple mediums (1090ES, UAT).	Roxaneh Chamlou	14-Jun-06	Closed	Reference Issue SP6. Presented a working paper write issue paper to distinguish between UAT TIDS-B and ADS-B.	

**Industry Meeting: SC-186 WG4 ASSAP MOPS**

No.	Item	Assignee	Date Due	Open / Closed	Comments	Solution
9	Due to time limitations the presentation was not completed. Slide 35 identified Latency/Performance Issues which are to be reviewed by the next ASSAP meeting in June. <ul style="list-style-type: none"> <li>• Latency for the combination of ASSAP and the CDTI shall (R3.210) be less than 400 ms for targets that are used by coupled applications, targets against which there is an alert, and the 10 highest priority targets.</li> <li>• Latency for the combination of ASSAP and the CDTI shall (R3.210) be less than 1 second for targets which are not intended for coupled applications, have no active alerts, and are not included in the highest 10 priority targets.</li> <li>• Track estimation shall (R3.188) extrapolate all established tracks to a common time within one-second of delivery to ASA applications or the CDTI interface.</li> <li>• The tracking function shall (R3.178) terminate a track when the maximum coast interval has been exceeded for all of the applications for which the track is potentially being used.</li> <li>• The maximum latency of the navigation data outputs to the ASA system will be less than 2 seconds (ASA MASPS, Page 144)</li> <li>• Selected App, Selected Target, flight crew selections, etc.</li> <li>• TCAS availability when ASSAP is failed?</li> </ul>	Randy & Larry Jonathan Hammer & Joel Wichgers will Assist	jan 7 '07	Open	R3.210 is open for modification in the ASA MASPS. An issue paper is needed to change these values since they are shall requirements in the ASA MASPS. Reference Issue SP7, SP8, SP9.	
10	Determine NASA involvement and/or availability related to the validation of requirements.	Rick Shay		Open	Roxaneh will contact Rick Shay	
11	Distribute revised ASSAP MOPS development schedule.	Roxaneh Chamlou		Closed	Distributed by Roxaneh via E-Mail	
12	Distribute revised ASSAP MOPS document outline.	Roxaneh Chamlou		Closed	Distributed by Roxaneh via E-Mail	
13	Determine the tracking capacity based on supporting the ASA applications.	Tom Eich	14-Jun-06	Closed	This issue was discussed at Group Meeting #2. No conclusions were made. Action items were created related to this issue. Reference Issue I3. See AI #3 with APL.	
14	Which applications are included in this version of ASSAP?	All	14-Jun-06	Closed	During Group Meeting #2, The group agreed to focus on the first 5 applications and consider other applications such as the advanced applications once they are further defined.	
15	How do we define the minimum requirements for Application Processing?	Don Walker	14-Jun-06	Closed	Reference Issue S4	
16	Is the selection of an application external to the ASSAP?	Don	jan '07	open	Reference Issue I2	
17	Is the ICAO address received via 1090 MHz unique?	All	14-Jun-06	Closed	The following was discussed at Group Meeting #2. Action items were assigned to assess the probability and safety implications of this issue. This issue has also been brought up to plenary. For now, ASSAP will assume that all addresses are unique for ADS-B and TCAS tracks. Reference Issue SP1.	
18	When is a TCAS symbol shown on the CDTI?	Tom E.	Feb '07	Open	When do we send more than one target report to the CDTI when we don't correlate? Do we need to send target type?	
19	Do we need to compensate for TIS-B latency?	All	14-Jun-06	Closed	Reference Issue SP5.	
20	What level of validation is required for ASSAP?	All	March '07	Open	Reference Issue SP11.	

**Industry Meeting: SC-186 WG4 ASSAP MOPS**

No.	Item	Assignee	Date Due	Open / Closed	Comments	Solution
21	Duplicate address issue. Provide some probability estimates regarding two or more aircraft having the same address in the same vicinity.	Tom E.		open	Ref AI#17. Reference Issue SP1. ADD justification for closing.	
22	Duplicate address issue. Contact Stu to see if the RFG group has performed a risk assessment for EVA/VSA regarding displaying or not displaying a target such as when two or more aircraft have the same address.	Roxaneh Chamlou		Closed	Ref AI#17. Reference Issue SP1.	
23	Duplicate address issue. Determine if the FAA has an opinion regarding the severity of not displaying a target for EVA when two or more aircraft have the same address.	Allen Branch		Closed	Ref AI#17. Reference Issue SP1.	
24	Duplicate address issue. Check the ASA MASPS safety analysis for not displaying a track. This information will help understand the case of not displaying a track when duplicate addresses exist.	Ruy Brandao		Closed	Ref AI#17. Reference Issue SP1.	
25	Study and read about the CD and EVA applications defined in the ASA MASPS	All		Closed		
26	Provide the authors of the ASA applications in DO-289 as a resource to questions	Roxaneh Chamlou		Closed	The authors are provided in Group Meeting Minutes #2.	
27	Provide the number and types of traffic in the LA2020 scenario within 12 Nmi and +/-4000ft.	Larry Bachman		Closed	"ASSAP-WP07-07_Traffic Densities From LA2020 Traffic Scenario.ppt" was provided and presented during telecon #4.	
28	Investigate the plan for equipage of surface vehicles. This information will help validate how many ground vehicles ASSAP will have to monitor and track.	Allen Branch	Jan '07	Open	Reference Issue SP2.	
29	Determine the availability of 1 Nm HPL for existing TSO-C129 sensors.	Don Walker		Closed	This issue is related to the EVA application requiring a NIC of 5 (1 Nm). Don presented the availability of 1 Nm HPL during the August 22nd group meeting. Reference Issue AP4.	
30	Present overall architecture at the next telecon since many of the attendees at group meeting #2 were not present at group meeting #1.	Roxaneh Chamlou	Next Telecon	Closed	Roxaneh presented overall architecture during telecon #2 and #3.	
31	Propose a way to scale the NIC based on the integrity containment risk (SIL).	Joel Wichgers	22-Aug-06	Closed	Reference Issue AP3.	
32	It was recommended that the track filters are not requirements but possibly MOPS guidance. The requirements should be performance based and testable. An action was taken to define the performance requirements for tracking.	Larry Bachman		Closed	Since we are not talking about KF, could this be OBE? APL will provide end-to-end performance section.	
33	Remove the following requirement in the presentation, "The new track ID be set to the report ID". This is a design requirement that should be left up to the manufacturer.	Roxaneh Chamlou		Closed		
34	Provide a corrected slide due to a typo with one of the equations.	Ganghuai Wang		Closed	Updated presentation was given on Day 2 of the ASSAP MOPS meeting #4.	

**Industry Meeting: SC-186 WG4 ASSAP MOPS**

No.	Item	Assignee	Date Due	Open / Closed	Comments	Solution
35	Don mentioned that the Capstone program considers traffic degraded when the accuracy is worse than 0.5Nm. Also, traffic is never removed from the display based on accuracy or integrity. The EVAq application in the ASA MASPS requires traffic to be removed when the bearing uncertainty is greater than 60 degrees based on accuracy (NACp) and range. The ASSAP MOPS group request someone from the Capstone project provide background information regarding their traffic requirements. (Post meeting editorial note from Roxaneh: ASA MASPS guidance was not available when Capstone implemented the CDTI.)			closed	This action item contains some incorrect statements. The Capstone system does not degrade traffic based on accuracy. Traffic degradation is based on Integrity, not position or bearing accuracy. The editorial note (that Capstone pre-dates any published CDTI requirements) is correct. I recommend adding these statements to the Comments section of the action item, and then marking it as Closed.	
36	Don's presentation included an analysis explaining how Honeywell transponders (DO-260 version 0) meet the minimum integrity requirements defined in the ASA MASPS. The ASSAP group request that other transponder manufacturers present a similar analysis and explain how NUCp is encoded on their current transponders.	Tom M. from Garmin, Bob S. from Collins, Tom E. from ACSS, etc		Closed	Don's presentation was updated in regards to how other transponder manufacturers calculate NUCp. This presentation was reviewed on Day 2 of the ASSAP MOPS industry meeting #4.	
37	Peter will provide the group a list of technical difference between DO-260 and DO-260A.	Peter Skaves		Closed		
38	Verify if the TCAS track priority is based on TAU (i.e., time to CPA) or closest in range. For example, if it is based on TAU, then ASSAP will change the ASSAP track priority to the following: RA alerts, TA alerts, ASA Application Alerts, Coupled traffic, Selected traffic, and then those with the smallest time to CPA.	Don Walker and Tom Eich		Closed	Don's presentation ASSAP-08-25 includes how TCAS tracks are prioritized. Only some TAs take into account TAU. Tom Eich's proposed ASSAP track priority will be used. May have to be readdressed when the requirements for the applications are developed.	
39	Determine how TCAS defined their tracking capacity and how it was evaluated. This information will be helpful in the determination of ASSAP's tracking capacity.	Don Walker		Closed	Don's presentation ASSAP-08-25 was presented during Day 2 of the ASSAP MOPS industry meeting #4.	
40	Randy said that there are 200 aircraft within 12 Nmi and +/- 4000' from the LA2020 scenario; the ASSAP group requested to know the distribution of aircraft types (Surface, Airborne, GA, etc.) for the 200 aircraft.	Randy / APL		Closed	"ASSAP-WP07-07_Traffic Densities From LA2020 Traffic Scenario.ppt" was provided and presented during telecon #4.	
41	How was the coverage volume of 45 NMI and +/- 15,600' determined for the CD application? This information will be helpful in the determination of ASSAP's tracking capacity.	Randy/APL		Closed		
42	Randy mentioned that Garmin may have a CD application. The ASSAP group requested to know how Garmin defined their tracking capacity to support their CD application. This information will be helpful in the determination of ASSAP's tracking capacity.	Tom M. / Garmin		Closed	Email response from Tom discussed during Telecon #4: "Garmin does not have a CD application."	
43	Provide a white paper justifying the minimum number of traffic required to track based on discussions during the group meeting. The proposed minimum number of aircraft for ASSAP to track was about 120 aircraft.	Randy / APL		Closed	Reference presentation ASSAP-WP08-12 presented during Day 2 of the ASSAP MOPS meeting #4.	
44	The ASSA and FAROA applications require a minimum of 30 closest surface traffic to be tracked and displayed. Discussions took place regarding if this is satisfactory for traffic of concern around the active runway. The ASSAP group requested to know how many aircraft with transponders exist today on an airport. This information will be helpful in determining approximately how many aircraft may be transmitting ADS-B data on the surface in the future.	Don Walker		Closed	E-mail response from Don discussed during Telecon #4: "I talked to Andy Leone at the Tech Center. According to the folks working the ASDE-X system, they have tracked up to 100 targets at the Atlanta Facility. I assume that includes airborne targets in the terminal area as well as surface targets. Andy said the requirement for the ASDE-X tracker is 200 targets."	

**Industry Meeting: SC-186 WG4 ASSAP MOPS**

No.	Item	Assignee	Date Due	Open / Closed	Comments	Solution
45	Peter will provide flight phase definition to the ASSAP group based on Boeing aircraft. This information may be used as a resource for determining the ANSD value automatically based on phase of flight.	Peter Skaves		Closed		
46	Perform ADS-B availability studies in regards to NIC and SIL.	Honeywell/MITRE	March '07	Open	Pending application studies. One application at a time.	
47	Joel will provide some preliminary NIC/NAC/SIL threshold values for the initial 5 ASA applications based on his proposed alternative 3.	Joel Wichgers		Closed	Reference Issue AP5. Joel provided a presentation during Day 2 of the ASSAP MOPS meeting #4.	
48	Roxaneh to update the schedule out to March '08. Also update the outline and schedule taking into account the current issues.	Roxaneh Chamlou		Closed	Roxaneh presented ASSAP-WP08-05 with the schedule updates during Day 1 of the ASSAP MOPS meeting #4.	
49	Provide a list of ADS-B anomalies based on Cascade and APL studies. This action is related to how long ASSAP should wait until establishing a track. Based on the types of anomalies ASSAP may decide not to establish a track until more than one report is received.	Jonathan H. for Cascade; Randy for APL		Closed	Randy presented ASSAP-WP08-17 during Day 2 of the ASSAP MOPS meeting #4.	
50	Roxaneh will send Sethu a description regarding the TIS-B service status from a RTCA document.	Roxaneh Chamlou		Closed		
51	Roxaneh will investigate the issue of mismatched traffic between the CDTI and what the ground controllers are seeing.	Roxaneh Chamlou		Closed	Roxaneh prepared an issue paper and it was presented on Day 2 of the ASSAP MOPS meeting #4. Reference Issue S7.	
52	The CDTI and ASSAP group agreed that the application selection issue needs further discussion. Two proposals from Jonathan and Sethu will be further discussed. (Choosing the quality metrics for how to depict the target)	Jonathan, Sethu, Don	Jan '07	Open	See Issue I2. Coordination meeting with CDTI.	
53	ASSAP to consider turning CD off below some altitude threshold; for example, TCAS inhibits RAs below 1000'.	Roxaneh	Feb '07	Open	Request from CDTI	
54	The CDTI group will provide the minimum number of traffic required to display to the ASSAP group. This number will drive the minimum number of traffic required for ASSAP to send to the CDTI.	CDTI Group		Open		
55	Create a white paper to deviate from Table 3-21 requiring display range / map scale and display orientation. Also check if there are other parameters in question. Some of the parameters may only be optional. Also, ACL and TQL are not expected for the initial release of the ASSAP MOPS.	Tom, ACSS; Randy, APL	Jan '07	Open		
56	Own-ship information to the CDTI is missing in Table 3-21 of the ASA MASPS such as lat/lon, ground speed, etc. Review the data from the STP document and propose which parameters need to be sent to the CDTI.	Tom, ACSS; Randy, APL	Jan '07	Open		
57	CDTI and ASSAP group should review the interface parameters in Table 3-21 in the ASA MASPS and decide which ones are optional versus required.		Jan '07	Open		
58	Coordinate MOPS document assembly issues between the ASSAP and CDTI group.	Roxaneh Chamlou; Tom Eich	April '07	Open		
59	The ASSAP group will propose some latency requirements between ASSAP and the CDTI. A white paper will also be written to resolve requirements that deviate from the ASA MASPS.	APL	Jan '07	Open		
60	Larry Bachman volunteered to write the Track Split section (Section 2.2.3.2.1.5.4). It was agreed (?) this is an issue for ADS-B, not limited to the UAT link.	Larry Bachman	March '07	Open		

**Industry Meeting: SC-186 WG4 ASSAP MOPS**

No.	Item	Assignee	Date Due	Open / Closed	Comments	Solution
61	Are sections 3 and 4 needed in the ASSAP MOPS document? Currently this section is very long compared to the 1 paragraph that the STP group used.	Dave Thomas		Open	Joel: yes needed for RTCA docs, but keep them short. FAA does not refer to section 3 or 4 in any TSOs or any official doc. Typically MOPS test stops at the lab. Installed tests were very terse. The shalls are never enforced by TSOs, only to section 2. Don provided a counter example with the TCAS MOPS which did a lot of tests.	
62	Roxaneh to update the Plenary dates based on comments from Larry B. and Tom M. We need to include 30 days for the FRAC and one week for the ASSAP WG to resolve comments. The Plenary meets every three months, with one meeting normally in December.	Roxaneh		Closed	Roxaneh presented ASSAP-WP08-05 with the schedule updates during Day 1 of the ASSAP MOPS meeting #4.	
63	Regarding ASSAP MOPS writing assignments. Identify which sections of the Application Processing General Requirements will be assigned to ACSS. Remaining sections will need assignees.	Tom Eich	11-Dec-06	Open	Reference group meeting minutes #4.	
64	Regarding I/O interfaces between ASSAP and CDTI. Coordinate and propose degraded traffic and qualified traffic interface requirements between ASSAP and the CDTI.	Tom Eich	Feb '07	Open	Reference group meeting minutes #4.	
65	Randy's presentation (ASSAP-WP08-12) determined that the CD application's altitude coverage volume should be +/- 20,600 ft instead of +/-15,600 ft as defined in the ASA MASPS. APL will verify how the ASA MASPS determined the coverage to be +/-15,600ft. Changing the requirement from the ASA MASPS needs to be considered. If so, then a white paper is required to deviate from the ASA MASPS requirements.	APL		Open	Reference group meeting minutes #4.	
66	Re-evaluate the velocity accuracy thresholds in the ASA MASPS for the CD application.	MITRE		Open	Reference group meeting minutes #4.	
67	Re-evaluate the accuracy thresholds in the ASA MASPS for the ASSA and FAROA applications. Mainly regarding the velocity accuracy at speed less than 50kts.	Don Walker		Open	Reference group meeting minutes #4.	
68	UAT TIS-B and UAT ADS-B reports are not distinguishable. An issue paper should be written to address this problem in the UAT Link MOPS.	Roxaneh		Open	Reference group meeting minutes #4.	
69	Traffic Geometric Altitude: How will the CDTI use geometric altitude? Relative altitude may be acceptable but converting it to pressure altitude may be an issue for the ABSOLUTE value on the target. The ASSAP group has decided that this is optional as a second source but needs to be discussed further with the CDTI group. Displaying traffic with an absolute value of GEO may be an issue. Delta (relative) GEO is ok but should be indicated.	Tom Eich		Open	Reference group meeting minutes #4.	
70	Don Walker attended the last SC-209 conference where Bill Thedford mentioned that the probability for a receiver to receive duplicate addresses is 10-6. Don Walker has an action item to gather more background information (e.g. paper, presentation) from Bill Thedford at the next SC-209 conference.	Don Walker		Open	Reference group meeting minutes #5.	

Industry Meeting: **SC-186 WG4 ASSAP MOPS**

No.	Item	Assignee	Date Due	Open / Closed	Comments	Solution
71	Last year the ASSAP group received a draft copy of a SCRSP document "Standards for traffic displays that include ACAS tracks" prepared by Ken Carpenter. Don Walker has an action item to contact Ken Carpenter at the next ICAO meeting in regards to the status of this document.	Don Walker		Open	Reference group meeting minutes #5.	
72	The ASSAP group has agreed to refer to "Selected Traffic" as "Highlighted Traffic". Tom Eich has an action item to create an issue paper since this is a deviation from the ASA MASPS.	Tom Eich		Open	Reference group meeting minutes #5.	
73	Investigate the implications of using relative geometric alt for traffic when pressure alt is unavailable. Currently the ASA MASPS allows relative alt for traffic to be calculated by either pressure or geometric altitude.	Sheila Conway		Open	Reference group meeting minutes #5.	
74	ASSAP will send traffic vertical rate values to the CDTI. The CDTI will use this value to calculate traffic vertical sense (decreasing or increasing). For example, TCAS uses +/- 500 fpm for this calculation. The first source for vertical rate from traffic is GNSS based. This may be a problem since aircraft usually fly pressure. Sheila Conway has an action item to investigate if GNSS vertical rate is acceptable for this calculation.	Sheila Conway		Open	Reference group meeting minutes #5.	
75	The vertical rate from ADS-B is generally GNSS based. Ganghuai Wang has an action item to investigate if this will cause any problems with the CD alerting algorithms.	Ganghuai Wang		Open	Reference group meeting minutes #5.	
76	Don Walker has an action item to create a latency diagram from the target's position source to the receive side of the CDTI. This information will be used create the ASSAP latency requirements in the ASSAP MOPS document.	Don Walker		Open	Reference group meeting minutes #5.	
77	Currently, only 36m has been allocated for own-ship position accuracy to support ASSA/FAROA. 65m has been allocated for the airport surface database. The ASSAP group would like to know what the typical accuracies for airport surface maps are. If the resolution is much lower than 65m then ASSAP would like to increase the accuracy allocation for own-ship position. Sheila Conway has the action item to check with Boeing regarding the typical database resolutions for airport surface maps.	Sheila Conway		Open	Reference group meeting minutes #5.	
78	Need quantization values soon from MITRE. For TSO C129 and C145, quantization numbers are needed for NIC and NAC values between 5 and 9; total of 20.	MITRE		Open	Reference group meeting minutes #5.	
79						
80						
81						
82						
83						
84						
85						
86						
87						
88						
89						
90						
91						
92						